

## **Task 4.2.5 Transferability Plan for the horticultural supply chain in ANDALUSIA**



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## TRANSFERABILITY PLAN

Name of the REINWASTE partner: IFAPA/AGAPA

### 1. Strategic phase

#### 1.1. Identification of the target supply chain(s) that will benefit of the transferability action

Type of supply chain (sector): Red fruit sector (Huelva, Andalusia, Spain): Strawberries, Raspberry, blueberry, and blackberries

Other sectors: Stakeholders from different agricultural sectors in Andalusia.

Region / country: Andalusia, Spain

Brief description: Although, REINWASTE pilot tests has been performed in the horticulture greenhouse production sector, the results obtained from the innovation solutions can also be disseminated to other productive sectors of vegetable production in Andalusia. One of the priority sectors is the Red fruit sector in the province of Huelva (Andalucía, Spain) that generate a significative volume of plastic waste and, therefore, the need to improve the plastic waste management and its minimization, given its importance for competitiveness and sustainability of farms.

Furthermore, the impact of this waste on the environment generates a clear social alarm, which reinforces the need to develop an efficient sustainable management model and innovative practices, which prove the appropriate treatment of plastics and contribute to the promotion of an effective circular economy in agri-food value chains. In this framework, REINWASTE highlighted some innovative practices that can be applied to the red fruit value chain, among other Andalusian agri-food value chains, to guide these sectors towards the reduction of plastics.

Besides, the Institute of Agricultural Research and Training (IFAPA) is a public Institute, where usually farmers and technicians, among other stakeholders of agri-food value chains in Andalusia, participate in the wide range of training courses organized annually. Therefore, we will take full advantages from REINWASTE results and knowledges to be disseminated and increase farmers' awareness about the impact of waste on the environment and on the market, as well as the level of adoption of innovations tested in the REINWASTE project that could help to minimize the generation of waste in their production processes.

## **1.2. Ex-ante analysis and diagnosis of the target supply chain(s) current state, in order to identify what are needs and main challenges in the framework of inorganic waste minimization that justify the transferability action**

Andalusia, (located in the southern part of Spain) occupies an area of 87,599 km<sup>2</sup>, making it one of the largest regions in Spain. The rural areas in Andalusia extend over an area of 69,772 Km<sup>2</sup>, representing 79.65% of the Andalusian territory, where 1,995,165 inhabitants live, 23% of the total Andalusian population. The Useful Agricultural Area (UAA) is 4,399,491 hectares (18.9%) of the national total, which shows the relative importance of the Andalusian agriculture sector compared with the Spanish agriculture. The importance of Andalusia in the agricultural sector can be seen also in the specific crops in which the region is an international leader, such as the horticultural greenhouses sector (tomato, cucumber, pepper, etc.) with 35.000 hectares in the provinces of Almería and Granada, that have been the empirical study areas in REINWASTE project in Andalusia, and where the pilot tests have been performed, and as the red fruits sector, mainly in the province of Huelva (Andalusia).

Specifically, the total planted surface of the red fruits sector in the province of Huelva for the campaign 2020/2021 was about 11.630 hectares according to Freshuelva, the Huelva Association of Producers and Exporters of Strawberries and Red Fruits of the province. This figure represents a little more than 50% of the total planted area in the province of Huelva, concentrating the most important area of production of red fruits (strawberries, raspberries, blackberries and blueberries) in the European Union.

The area planted by strawberry growers in the province of Huelva, the main European producer, is about 6,105 hectares during the campaign 2020-2021, the blueberry occupies an area of 3,310 hectares and the raspberry area is about 2,070 hectares. The surface of the blackberries is about 145 hectares.

Due to the importance of this crop, Freshuelva organizes each year the International Congress of Red Fruits that will be held in September during 2021. This event has already become the most important international meeting that celebrates the sector of the berries, joining in the same space the producing, commercializing, and exporting companies. During the last congress, it is being highlighted, the "serious problem" of plastic waste that continues to suffer in the province of Huelva, and the priority to better manage this problem, "that can cause irreparable damage to the sector both in external image and prices". The waste "is the number 1 enemy that currently has the sector" today in the province of Huelva. In fact, it is estimated that the agricultural sector in Huelva currently generates between 18,000 and 25,000 tons of plastic waste, especially used to produce red fruits in greenhouses. This enormous amount of waste generation becomes a challenge to be faced with the implementation of the current intensive production system of red fruit in Huelva Province, being the most important pole of production of red fruits in Andalusia and Spain.

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Some initiatives have been made in the red fruit sector to reduce plastic waste generation. For example, the case of the technological centre of the Agroindustry (Adesva), that has tested in the field the biodegradable mulching plastic mainly in strawberry. This biodegradable mulching plastic is an initiative of the European BIOMULCH project, which has been also tested as one of the 5 pilot tests implemented in REINWASTE project in the horticultural greenhouses, to evaluate its technical, economical and sustainability efficiency. This could be an added value and a complementary experiment that allows to verify the validity of these biodegradable plastics and obtain more reliable results to be transferred to the sector.

Another initiative performed also by Adesva and Interfresa (Interprofessional Association of the Andalusian Strawberry) is the Siggplast model to the organizations of producers of Fruits and Vegetables. The Siggplast model allows the adequate treatment of plastic waste by farmers, collaborating with the circular economy of this waste stream through its effective recyclability.

In this context, it would be of great interest to disseminate the innovative practice identified, developed and evaluated by the REINWASTE project in horticultural greenhouses sector to the red fruits sector, since both sectors have many similar practices and logistics among their production systems that make a priority the dissemination of knowledge generated through these innovations, in order to minimize the waste production, especially plastic, and, therefore, contribute to its sustainable management generated by Huelva's agriculture according to circular bioeconomic approaches.

Below you can see some photos to get an idea about the red fruits sector and the use of greenhouses:

Foto 1. Greenhouses of strawberry in Huelva (Andalusía, Spain)



Foto 2. A farmer in a field prepared to plant strawberries





Foto 3. Huelva's agriculture generates between 18,000 and 25,000 tons of plastic waste



Sources of photos:

<https://ciudadesva.com/adesva-disena-el-primer-modelo-de-gestion-del-residuo-del-plastico-agricola-por-y-para-el-agricultor/>

<https://www.freshplaza.es/article/9020334/Espana-Adesva-ensaya-por-segundo-ano-su-plastico-acolchado-biodegradable/>

## **2. Pre-intervention phase**

### **2.1. Describe the general and specific objectives (linked to the ex-ante analysis) that the transferability measures aims to achieve**

The transferability plan aims to increase farmers adoption of the tested innovative practices in REINWASTE project to minimize inorganic waste generation, generally and mainly plastics. To this end, it is intended to:

- 1- Increase the level of awareness of farmers regarding the significant volume of plastics generated in the agri-food value chains and its impact on the environment, generally and in particular on their competitiveness.
- 2- Increase the level of knowledge of farmers regarding the existing of technological innovations in the market, generally as well as the innovative practices tested by REINWASTE and their technical, economic, and environmental results.
- 3- Increase the level of adoption by farmers of these innovations and, if necessary, the possibility of its adaptation in their crops to minimize plastic residues.
- 4- To enable farmers how to take advantage of the new quality attributes linked to “zero-waste production” processes to added value to their products and create market opportunities and, therefore, improve their competitiveness and profitability at national and international levels.

In addition to these specific objectives for red fruits producers in general and other Andalusian farming systems, some possible contents and structure of a more comprehensive transfer plan are detailed hereunder (see table below), targeting the main stakeholders of the agri-food value chains in Andalusia. According to IFAPA’s experience this plan should include three levels of target groups:

- **General public**, whose objective would be to disseminate the approaches of circular economy and waste management to ordinary citizens, via:
  - Media (Ex: press releases sent to local newspapers).
  - Partners websites (Ex: IFAPA’s, AGAPA’s and the Regional Ministry of Agriculture’s websites).
  - Public dissemination events such as European Researchers Night, Coffee with Science or local dissemination platforms such as “Almería con Ciencia”, etc.
  - Scholar campaigns (Ex: Distribution of REINWASTE real products kits consisting of compostable and recycled bags, biobased plastic samples, brochures, etc. and conferences to be held in primary and secondary schools).
  - Consumers (Ex: Brochure distribution in local events such as Almería Spanish Gastronomical Capital, agronomic fairs, etc.).
- **Stakeholders inside each value chain:**
  - Official Partners Training programmes (Ex: IFAPA’s future courses programs targeted in all IFAPA centres around 30.000 students/farmers per year, could include transference of REINWASTE objectives and results).
  - Technical dissemination sessions (addressed to farmers, technicians and agri-food companies).
  - Specialisation courses about waste management, where the results of the project could be transferred to different value chains.
  - Publication of results and findings in scientific and sectorial journals.
  - Sharing of results with interprofessional associations of other agri-food sectors.

- **Institutions:**

- Meetings with involved Agricultural Administration Authority at local and regional level.

The previous transfer plan will include a wide range of actions on technical and scientific conferences, fairs, courses, congresses, sectorial and JCR journals at national and international. In the table included in section 3 the main activities are detailed:

## **2.2. Explain to which extent the results of the pilot actions implemented into the WP3 pilot could be transferred to the target supply chain**

Although the objective of this transfer plan is to disseminate to the Andalusian agricultural sectors and general public the results of the pilot tests implemented during the REINWASTE project (both technical ones linked to plant staking (raffia) and “plastic mulching practices”, and those linked to issues of management and recovery of waste, such as the “associative waste management”, “the application of documentary traceability to waste management” and the “energetic valorisation of difficult-to-manage waste”), it is planned to adapt this objective according to each agricultural system that may potentially have similar practices, and target group in society.

For example, regarding to the management and recovery practices mentioned above, due to its transversal nature to improve waste management and its valorisation, they can be a common innovative practice to be transferred to all the Andalusian agri-food sectors in general. However, in the case of the red fruits sector in Huelva, described previously, of the 5 pilots tested in the REINWASTE project, it is estimated that, except for the pilot project on alternatives to plastic staking “raffia”, which is not a technique used in the red fruit sector, the rest may have great potential to be transferred to this sector.

Concerning the general public (consumers, students, etc.) as a target group of this transfer plan, the objective will be to disseminate and increase their knowledge about all aspects related to the impact of plastic waste on the environment and the importance of changing their attitude and habits in their purchasing and consumption decisions, to minimize the generation of waste from the demand side. Likewise, conceptual aspects linked to bioeconomy, circular economy, biodegradability, composability, bioproducts, waste, etc., will be explained. Conventional and other alternative plastics in agri-food products will be also explained. In short, the objective is to raise their level of awareness regarding agricultural waste, in general and therefore, to increase their level of willingness to buy and pay for agri-food products whose production systems have generated zero or minimum waste.

Below some details about the innovative practices that will be transferred, always compared with the conventional ones:



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**1. Use of alternative materials for plant staking (raffia):**

- Conventional practice: Use of polypropylene plant staking elements (raffia).
- Alternative 1: Use of reusable plant staking element (raffia).
- Alternative 2: Use of 100% plant origin (jute) 100% compostable plant staking elements.
- Alternative 3: Use of biodegradable plant staking element (mixture of plant origin and a polymer).

**2. Use of alternative materials for plastic mulching:**

- Conventional practice: Use of low-density polyethylene mulching.
- Alternative 1: Use of compostable plastic mulching.
- Alternative 2: Use of in-soil biodegradable plastic mulching.

**3. Energetic valorisation of difficult-to-manage waste:**

- Conventional practise: Use of conventional waste management channels.
- Alternative 1: Valorisation by gasification.

**4. Application of documentary traceability to waste management:**

- Conventional practice: Use of common documentary traceability control systems.
- Alternative 1: Use of a hard-copy (physical) based documentary traceability system.
- Alternative 2: Use of a telematic traceability software.

**5. Comparison of different associative waste management levels:**

- Conventional practice: Individual farmer waste management.
- Alternative 1: Agreements of farmers' association with several waste management companies.
- Alternative 2: Agreement of farmers' association with a unique management company.
- Alternative 3: The farmers' association becomes a waste manager.

Throughout this transfer plan, the training materials prepared in the REINWASTE project such as, e-material, videos, articles, among others will be used.

### 3. Intervention deployment (options: in presence, virtual, only on paper)

Below there is a list with the most suitable transferability initiatives dedicated to the mentioned target supply chains. This list includes potential interactions to be organized during or after the project lifetime.

List of transferability initiatives		Description of the objective of the transferability	Main beneficiary	Timing (deployment period)
N°	Type of intervention (workshop, webinar, study visit etc...)			
1	<p><b>National Environmental Congress. CONAMA 2021.</b></p> <p><a href="http://www.fundacionconama.org/conama-2020-se-celebrara-en-abril-de-2021/">http://www.fundacionconama.org/conama-2020-se-celebrara-en-abril-de-2021/</a></p>	<p>In the frame of the Technical Committee CT.46 on Marine Waste of Conama 2021, we will prepare and send the called an “Experience sheet” to present results of the REINWASTE project on minimizing plastic generation.</p> <p>One of the objectives of the Marine Waste Committee is to identify projects (scientific, technical, innovation, ...) that are developing studies, analysis, research, solutions, applications, tools, etc. that are related to the problem of marine, either directly or indirectly, ie that can contribute to solving the problem of plastic. In this case we will present how REINWASTE from the innovative practices the “use of alternative materials for plastic mulching”; the “Energetic valorisation of difficult-to-manage waste” and the “Associative waste management models” can contribute to minimize plastic waste generated by agrifood sector reducing the amount of plastic that can end up in the sea due to its bad management.</p> <p><b>Estimated target group: 400</b></p>	<p>Researchers, institutions, technicians, ONG, general public, farmers among other different interlocutors of the environmental sector: professionals, academics, companies, social and environmental organizations and the civil society.</p>	<p>April 19th to 22nd, 2021. Madrid. Spain.</p>

List of transferability initiatives		Description of the objective of the transferability	Main beneficiary	Timing (deployment period)
2	<b>7<sup>th</sup> Farming System Design Symposium</b>  <b>CIHEAM-IAMM, ICARDA, FAO and IRESA-Tunisia.</b>  <a href="https://fsd7.sciencesconf.org/">https://fsd7.sciencesconf.org/</a>	<p>We will present a Poster/Oral communication to disseminate the objective of REINWASTE, methodologies and results of the pilot tests performed in horticultural sector to stakeholders from different countries (Middle East, Northern Africa. etc.) to innovate and develop adaptation strategies for their agri-food systems towards zero waste.</p> <p><b>Estimated target group: 300</b></p>	<p>Researchers, institutions, technicians, agricultural associations, students, professionals, academics.</p>	<p>March 20th-23rd, 2022 in Tunis</p>
3	<b>Congress of the Spanish Association of Agrifood Economy</b>  <a href="https://economiaagrolimentaria.es/proximamente/">https://economiaagrolimentaria.es/proximamente/</a>	<p>We will present a Poster/Oral communication to disseminate the objective of REINWASTE, methodologies and results of the pilot tests performed in horticultural sector to scientific and academic communities.</p> <p><b>Estimated target group: 150</b></p>	<p>The Congress will allow researchers from Universities and Research Centers, as well as members of the administration and the business world, to address and debate topics of great interest and current affairs.</p>	<p>1st, 2nd and 3rd of September, 2021. Cartagena. Murcia. Spain.</p>
4	<b>International Society for Horticultural Science (ISHI). IV International Symposium on Horticulture in Europe.</b>	<p>We will present a Poster/Oral communication to disseminate the objective of REINWASTE, methodologies and results of the pilot tests performed in horticultural sector to scientific and academic communities.</p> <p><b>Estimated target group: 300</b></p>	<p>Researchers, companies, institutions, technicians, agricultural associations, students, professionals, academics.</p>	<p>Stuttgart from 8th-12th March 2021.</p>
5	<b>III Congress of Young Researchers in Agrifood Sciences. 2021</b>	<p>We will present a Poster/Oral communication to disseminate the objective of REINWASTE, methodologies and results of the pilot tests</p>	<p>Young academic researchers and students in agricultural fields.</p>	<p>October, 2021</p>

List of transferability initiatives		Description of the objective of the transferability	Main beneficiary	Timing (deployment period)
	<a href="http://www.congresojovenesinvestigadoresagro.es/el-congreso/">http://www.congresojovenesinvestigadoresagro.es/el-congreso/</a>	performed in horticultural sector to scientific and academic communities.  <b>Estimated target group: 300</b>		
6	<b>Technical article publication in SERVIFAPA.</b>  SERVIFAPA is a free, universal, public service web platform for knowledge transfer oriented to the demand of the rural and marine environment. It offers a wide range of services and products related to agricultural and fishing activities.	Publication of a highly informative technical article including the main results of innovative practices tested and evaluated from a technical, economic, and environmental point of view within the framework of the REINWASTE project.  <b>Estimated target group: 1.000</b>	Farmers, technicians, industries, agricultural cooperatives, and associations.	April, 2021
7	<b>Scientific and international article SJR with</b>  <b>Revue: SUTAINABILITY (Open access): impact factor: 2,57</b>  <b>Special Issue "New Challenges for the Sustainability and Competitiveness of Agricultural Systems: Bioeconomy Strategies Focused on Soil Management, Use of</b>	Publication of an article in the international revue "Sustainability" with impact factor and open access, including the main results of innovative practices tested and evaluated from a technical, economic, and environmental point of view.  <b>Estimated target group: 1.000</b>	Scientists and academic researchers, high education.	March, 2021



List of transferability initiatives		Description of the objective of the transferability	Main beneficiary	Timing (deployment period)
	<b>Natural Resources and Climate Change Mitigation</b>  <a href="https://www.mdpi.com/journal/sustainability/special_issues/Agricultural_Systems">https://www.mdpi.com/journal/sustainability/special_issues/Agricultural_Systems</a>			
8	<b>European Researchers' Night:</b>  It is a Europe-wide public event that brings researchers closer to the general public "to society".	<p>Inside IFAPA's stand in this event we will participate with a talk and a workshop to the general public.</p> <p>This event will highlight how REINWASTE contribute to society by displaying our work in an interactive and dynamic forum.</p> <p>The objective is to disseminate and increase general public knowledge about all aspects related to the impact of plastic waste on the environment and the importance of changing their attitude and habits in their purchasing and consumption decisions, to contribute to minimize the generation of waste in the agrifood production processes from the demand side. The aim is to raise their level of awareness regarding agricultural waste in general and plastic in particular, and to increase their level of willingness to buy and pay for agri-food products whose production systems have generated zero or the minimum of waste.</p> <p><b>Estimated target group: 300</b></p>	General public	September, 2021
9	<b>SMART AGRIFOOD SUMMIT 2021</b>	In the corner of IFAPA or of the Ministry of Agriculture of Andalusia that usually participates in this event, we will perform face to face interviews with companies that	Startup Europe Smart Agrifood Summit is an event for the digital	7 – 8 october, Málaga. Spain

List of transferability initiatives		Description of the objective of the transferability	Main beneficiary	Timing (deployment period)
	<a href="https://fycma.com/evento/smart-agrifood-summit-2021/">https://fycma.com/evento/smart-agrifood-summit-2021/</a>	<p>want to know with details the results of the pilot tests performed in horticultural greenhouses sector in the framework of REINWASTE Project.</p> <p>Furthermore, a poster will also be displayed at this corner.</p> <p><b>Estimated target group: 100</b></p>	<p>transformation of the agro-food sector, where startups and consolidated companies in the agri-food innovation sector are the main actors.</p> <p>SME (micro, small, medium enterprise)</p> <p>- Business support organisation</p>	
10	<p><b>Technical article</b></p> <p><b>Revue Alimentaria.</b></p> <p><a href="https://www.revistaalimentaria.es/">https://www.revistaalimentaria.es/</a></p> <p><b>Indexed in Latindex</b></p> <p><a href="https://dialnet.unirioja.es/servlet/revista?codigo=39">https://dialnet.unirioja.es/servlet/revista?codigo=39</a></p>	<p>Publication of a highly informative technical article including the main results of innovative practices tested and evaluated from a technical, economic, and environmental point of view in the framework of the REINWASTE project.</p> <p><b>Estimated target group: 1.000</b></p>	<p>SME (micro, small, medium enterprise)</p> <p>Agrifood industries, farmers</p>	April, 2021
11	<b>FAIR: INFOAGRO. “IV feria de horticultura intensiva Infoagro Exhibition”. Almería. Andalusia. Spain.</b>	<p>During the fair within the institutional stand of the Andalusian Ministry of Agriculture we will create a dedicated corner (poster, etc.) to disseminate the results of the project in the horticultural sector through a poster or digital communication materials, including videos, etc.</p>	<p>National and international stakeholders from the entire horticultural value chain: (SME: micro, small, medium enterprise),</p>	26th – 28th May 2021

List of transferability initiatives		Description of the objective of the transferability	Main beneficiary	Timing (deployment period)
		<b>Estimated target group: 200</b>	industries, institutions, operators in the horticultural sector and trade associations.	
12	<p><b>Multiple courses within the IFAPA 2021 training programme</b></p> <p><a href="https://ifapa.junta-andalucia.es/agriculturaypesca/ifapa/web/ifapa/servicios/oficinaviertual/texto/0ef59b20-1734-11e0-b9f1-c5d9efb4b7b6">https://ifapa.junta-andalucia.es/agriculturaypesca/ifapa/web/ifapa/servicios/oficinaviertual/texto/0ef59b20-1734-11e0-b9f1-c5d9efb4b7b6</a></p> <p><b>Courses for young farmer incorporation into the agricultural activities:</b></p> <ul style="list-style-type: none"> <li>- 2 olive grove farmers courses (25 students each course)</li> <li>- 2 intensive agricultural courses (25 students each)</li> <li>- 1 edition fruits courses (25 students each). Three types: qualified, basic, fumigator.</li> <li>- 2 Integrated Production (IP)</li> </ul>	<p>Innovative REINWASTE practices and main results will be explained to young farmers during all these courses from IFAPA training program during 2021.</p> <p>This will be through some speeches and using infosheet/ematerial prepared in the project as well as videos on the horticultural greenhouse sector to disseminate the main information.</p> <p><b>Estimated target group: 400</b></p>	New farmers starting up in the agricultural enterprise (Young farmers)	During all the year 2021 (from January to november, 2021)

List of transferability initiatives		Description of the objective of the transferability	Main beneficiary	Timing (deployment period)
	<p><b>courses: two modules: one generic and one specific module on olive groves (25 students each)</b></p> <p><b>Total: 16 courses x 25 students each course = 400 young farmers.</b></p>			
13	<p><b>Distribution of information and dissemination material into the Regional Agricultural Offices. On-site or on-line events through the Regional Agricultural Offices.</b></p>	<p>The Regional Agricultural Offices are devoted to spread information and assist farmers about agricultural issues, facilitating farmers the access to the services of the Regional Ministry of Agriculture. As such, they can be a good platform to disseminate information about inorganic waste reduction and the innovative solutions tested in REINWASTE through the distribution of information material, or the organisation of on-line or on-site events.</p> <p><b>Estimated target group: 300</b></p>	Farmers and agrifood industries	During all the year 2021 and 2022
14	<p><b>On-line transfer events to Andalusian farmers, agro-industries, policy makers and other stakeholders</b></p>	<p>As part of the initiatives included in the Plan to improve the competitiveness of the agricultural, livestock, fishing and agro-industrial sectors and rural development of Andalusia 2020-2022, which includes, a programme to improve knowledge in the management of inorganic waste, on-line transfer events will be organised joining the agri-food sector, policy makers, researchers, waste managers and other stakeholders with the aim to increase agri-food production</p>	Policy makers, farmers and agrifood industries, waste managers, researchers, and other stakeholders.	Feb 2021 and subsequent events during 2022



List of transferability initiatives	Description of the objective of the transferability	Main beneficiary	Timing (deployment period)
	<p>under more sustainable production systems and promote circular economy.</p> <p><b>Estimated target group: 300</b></p>		

#### 4. Post-intervention phase

To be filled out in case you manage to organize some transferability initiatives during the project lifetime

##### 4.1. How do you globally evaluate the effectiveness of the transferability plan deployment?

- ☐ Poor (low efficacy of the transfer plan / poor interest by the external stakeholders)
- ☒ Good (the transfer plan meets the expectations of the external stakeholders)
- ☐ Excellent (the transfer plan likely mobilize the external stakeholders to consider the REINWASTE approaches / solutions as strategy to reduce inorganic waste)

##### 4.2. How many external economic stakeholders did you globally concern into the transferability phase?

1. National Environmental Congress: **Estimated target group: 400.**
2. 7<sup>th</sup> Farming System Design Symposium. CIHEAM-IAMM, ICARDA, FAO and IRESA-Tunisia. **Estimated target group: 400.**
3. Congress of the Spanish Association of Agrifood Economy. **Estimated target group: 150.**
4. International Society for Horticultural Science. IV International Symposium on Horticulture in Europe. **Estimated target group: 300.**
5. III Congress of Young Researchers in Agrifood Sciences. 2021. **Estimated target group: 300.**
6. Technical article publication in SERVIFAPA. **Estimated target group: 1.000.**
7. Article in international Revue: SUTAINABILITY (Open access). **Estimated target group: 1.000.**
8. European Researchers' Night. **Estimated target group: 300.**
9. SMART AGRIFOOD SUMMIT 2021. **Estimated target group: 100.**
10. Technical article. Magazine Alimentaria. **Estimated target group: 1.000.**
11. FAIR: INFOAGRO. Almeria. Andalusia. Spain. IV International Fair on intensive fresh production Infoagro Exhibition. **Estimated target group: 200.**
12. Multiple courses within the Ifapa 2021 training programme. **Estimated target group: 400.**

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Courses for incorporation into the agricultural activities (young farmers):

- 2 olive grove farmer courses (25 students each course)

- 2 intensive agricultural courses (25 students each)

1 edition of fruit courses (25 students each). Three types: qualified, basic, fumigator.

2 Integrated Production (IP) courses: two modules: one generic and one specific module on olive groves (25 students each)

Total 16 courses x 25 students each course = **Estimated target group: 400 young farmers.**

13. Distribution of information and dissemination material into the Regional Agricultural Offices.

**Estimated target group: 300.**

14. On-line transfer events to Andalusian farmers, agro industries, policy makers and other stakeholders. **Estimated target group: 300**

**TOTAL ESTIMATED TARGET GROUP OF THE TRANSFERABILITY PLAN: At least 6,050 stakeholders.**

#### **4.3. What are the main barriers that the target stakeholders / supply chain should face when approaching the solutions proposed by REINWASTE**

The innovative practices implemented and assessed from the economic, environmental, and social point of view are contrasted in horticultural production greenhouses. In this case, they cannot be considered universally valid for all farming greenhouses system. As mentioned previously, during the transferring plan execution this aspect should be considered by adapting these innovative techniques to the target agricultural systems. For example, specifically, in the case of the red fruits sector in Huelva, described previously, of the 5 pilots tested in the REINWASTE project, it is estimated that, except for the pilot project on alternatives to plastic staking “raffia”, the rest may have great potential to be transferred to the red fruits sector. Likewise, regarding to the management and recovery practices mentioned above, due to its transversal nature to improve waste management and its valorisation, they can be common innovations to be transferred to all the Andalusian agri-food sectors. Furthermore, the choice of an alternative solution should be assessed by farmers according of the type of their farming (greenhouses or not, etc.).

Finally, it should be also mentioned that the innovative practices have other several limiting factors. The most important are the high costs and the lack of availability of alternative materials to those used conventionally. In this sense, policies and the design of socioeconomic strategies must therefore be aimed at reducing, minimizing, or eliminating this type of limiting factors.

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**4.4. Will the target stakeholders / supply chain likely implement the REINWASTE approach / solutions afterwards?**

Yes

In the section above (1.2.) “Ex-ante analysis and diagnosis of the target supply chain(s)”, we highlighted that there is a "serious problem" of plastic waste in some Andalusian farming systems. In fact, as an example, the intensive sector of red fruits in the Province of Huelva, occupying 11.630 hectares (Andalusia, Spain), it is estimated that between 18,000 and 25,000 tons of plastic waste/year is generated in the production process. The plastic waste, according to stakeholders, "is the number 1 enemy" that currently has the red fruits sector in the province of Huelva. Thus, this enormous amount of waste generated becomes a challenge to be faced in this intensive production system. According to our diagnostic, red fruits greenhouses sector and other similar farming system in Andalusia are likely to be able to use the innovative practices identified, developed, and evaluated by the REINWASTE project in horticultural greenhouses sector. Thus it is a priority the dissemination of knowledge generated through these innovations, in order to minimize the waste production, especially plastic, and, therefore, contribute to the sustainable management in the Andalusian agricultural farming systems according to circular economy approaches.